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18.7200

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67864
SOV/125-60-1-7/18

AUTHOR: Dudko, D.A., Rublevskiy, I.N., Tyagun-Belous, G.S.

TITLE: On the Influence of the Electroslag Process Conditions on the Dimensions of the Metal Pool During Fusion of Large Cross-Section Electrodes

PERIODICAL: Avtomaticheskaya svarka, 1960, Nr 1, pp 55-61 (USSR)

ABSTRACT: The electroslag process is now being used not only for welding but also in metallurgy for producing irregular castings and ingots without loss of head [Ref 1-3], and for remelting special steels [Ref 4]. The article contains a detailed description of experiments in which the interrelationship of the volume of the metal pool, the position of the electrode in the weld pool, and various process parameters was determined. Experiments were conducted with fusible steel electrodes and non-fusible graphite electrodes in a copper chill mould. It was concluded that: 1) the dimensions of the metal pool during electroslag melting of large cross section electrodes

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SOV/125-60-1-7/18

On the Influence of the Electroslag Process Conditions on the Dimensions of the Metal Pool During Fusion of Large Cross-Section Electrodes

increases with current, voltage, electrode diameter and with the depth decrease of the slag pool. This is explained by the increase in the quantity of electrode metal melted in a time unit. 2) Other process conditions remaining the same, when a non-fusible graphite electrode is used, the volume of the metal pool is 4.5 to 4.7 times smaller than with a fusible steel electrode. The electroslag process which uses a non-fusible electrode is scarcely effective for the transference of heat to the metal pool. Most of the heat enters the metal pool via superheated drops of electrode metal. 3) It can be assumed that a high-temperature zone exists in the slag pool at the contact surface of the electrode, a fact which explains the phenomenon sometimes observed when the size of the metal pool decreases rapidly, despite a con-

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On the Influence of the Electroslag Process Conditions on the Dimensions of the Metal Pool During Fusion of Large-Cross-Section Electrodes

siderable increase in the heat power of the process. There are 4 drawings, 1 oscillogram, 5 graphs, and 11 Soviet references.

ASSOCIATION: Ordena Trudovgo Krasnogo Znameni Institut elektrosvarki im. Ye.O. Patona AN USSR (Order of the Red Banner of Labor Institute of Electric Welding imeni Ye.O. Paton US UkrSSR)

SUBMITTED: February 10, 1959

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S/125/60/000/06/02/007

18.7200

AUTHORS: Dudko, D.A., and Lakiza, S.P.

TITLE: Automatic Welding of Annular Seams with Very Small Diameter by Cone Arc

PERIODICAL: Avtomaticheskaya svarka, 1960, No. 6, pp 42 - 45

TEXT: No special automatics existing for shielded arc welding [Ref. 1] of small annular work pieces use carbon or tungsten electrodes, nor could thin welding rods [Ref. 2] be used for the special case described, in which work piece shown in Figure 1 had to be welded. The diameter was less than 5 mm, with wall of stainless steel thinner than 0.5 mm. The joint had to be mechanically strong and vacuum-tight; the welding metal was not to protrude more than 0.05 mm to the outside, and the central point of the work piece was to be heated not over 300°C in the welding process. After failure with existing equipment, it was decided to use the "cone arc" method which was previously used for the first time for welding small-diameter tubes of magnesium alloy to grids [Ref. 3], i.e. by an inclined arc being rotated at high speed through the effect of a magnetic field. The optimum process parameters were found by trial-and-error: "BT-7" (VT-7) tungsten electrode of 1.6 mm diameter; argon for shielding, in quantity of 10

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Automatic Welding of Annular Seams with Very Small Diameter by Cone Arc

liter/min; current of 45 amp and 10 volt; arc burning duration between 0.2 and 0.3 sec; 0.5 mm gap between the edges of the work piece and the electrode tip; 25 mm free electrode end length. Solid and smooth welds were obtained (Photo, Figure 3). No marked difference of microstructure between the base and the welding metal was observed (Photo, Figure 4). Welding of larger work pieces, of 15 mm diameter and more, had also been tried with a solid and a tubular electrode, as shown in diagram (Figure 5), but only stronger current (of over 150 amp) gave a stable process, which is too high for welding thin metal. It is supposed that common commercial tungsten used for the electrode was the cause of the unstable welding process with weak current. Water cooled copper electrodes gave analogous results. It is concluded that the "cone arc" method (i.e. by an arc rotating in a magnetic field) is worth further study on development of machine welding technology for connecting tubes with tube grids, or similar work. There are 5 figures and 5 references, 4 of which are Soviet and 1 English.

ASSOCIATION: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im.Ye.O. Patona AN USSR (Red Banner of Labor Electric Welding Institute imeni Ye.O.Paton AS UkrSSR)

SUBMITTED: February 4, 1960

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

S/125/60/000/007/008/010
A161/A029

AUTHORS: Dudko, D.A.; Vinogradskiy, F.M.

TITLE: Welding Horizontal Seams on Vertical Surface with Carbon Dioxide Shielded Arc

PERIODICAL: Avtomaticheskaya svarka, 1960, No. 7, 80 - 83

TEXT: Automatic and semiautomatic welding techniques are described that were used for annular seams on pipes and in construction of blast furnaces. Carbon dioxide was used because of its lower cost than argon and its availability; the major difficulty of completing the last outer portion had been mastered by using edge bevelling shown in illustrations. Automatic shielded arc welding was used for horizontal annular joints on vertical thick-wall (273x35 mm) pipes of "20" steel, using 2 mm Св-10ГС (Sv-10GS) wire and direct current with inverse polarity and a remaining steel support ring (usually employed for manual welding (Fig. 1, a). To improve shielding of outer seam layers a 25 - 30 mm wide ring was placed, as seen in the figure, under the bottom end of the joint. To prevent splatter the gas nozzle was made not concentrical with the wire but flat with a slit, so that it could be moved inside the gap. The gas nozzle was placed in

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Welding Horizontal Seams on Vertical Surface with Carbon Dioxide Shielded Arc

front of the electrode and the gas jet shielded the arc, the pool and the weld bead for 40 - 60 mm behind the arc. One seam of 21 passes (macrophotograph, Fig. 1b) is shown. The total machine welding time per one seam was 45 min, or three to four times less than usual in manual welding. Another example is the semiautomatic welding technique with edges bevelled differently to prevent running down of liquid metal. This technique had been used for welding on site of a blast furnace project with semiautomatic welders and auxiliary welding equipment made by the Electric Welding Institute imeni Paton. The parent metal was "Ст.3" (St. 3), killed; the welding wire "Св-10ГСМ" (Sv-10GSM) ensuring a weld metal of 52 - 54 kg/mm^2 tensile strength and good plasticity. The chemical weld metal composition was: 0.14% C; 0.71% Mn; 0.34% Si. Automatic welding of butt joints on vertical 273 mm diameter and 32 mm wall pipes of butt ends took 10 min per joint only. The seam in Figure 3b was made with special electrode wire of 3 mm diameter. The chemical composition of the pipe, wire and weld metal was:

	C	Mn	Si
pipe	0.18	0.41	0.24
wire	0.07	1.20	0.91
weld	0.10	0.70	0.19

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Welding Horizontal Seams on Vertical Surface with Carbon Dioxide Shielded Arc

The latter kind of joint is to be preferred for its productivity and cheapness, though the development of the automatic welder and process techniques for such horizontal joints is difficult. There are 3 figures.

ASSOCIATION: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im. Ye.O. Patona AN UkrSSR (Electric Welding Institute "Order of the Red Banner of Labor" imeni Ye.O. Paton of the Academy of Sciences of the Ukrainskaya SSR)

SUBMITTED: March 21, 1960

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S/125/60/000/009/002/017
A161/A130

1.2360 2708, 1573 only

AUTHORS: Dudko, D.A., and Rublevskiy, I.N.

TITLE: Electromagnetic Mixing of the Slag and Metal Pool in the Electro-Slag Welding Process

PERIODICAL: Avtomaticheskaya svarka, 1960, No. 9, pp. 12-16

TEXT: At the present time the temperature of the welding pool in the electro-slag process is controlled by various means; such as changed voltage of the type of current, bath depth, electrode throat or diameter, electrode vibration frequency. A new effective means has been found for this purpose - forced bath mixing by electromagnetic pull. Suggested simple arrangements that are suitable for electro-slag welding or remelting, resistance-slag welding or other processes are shown in Fig. 1. The welding current flows between the electrode (1) and work (2) through the slag pool (3) and molten metal (4). Magnetic flux lines cross the liquid pool, and the axial force

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Electromagnetic Mixing of the Slag and Metal Pool in the Electro-Slag Welding Process

acting on it makes the pool rotate with acceleration up to a velocity limit determined by the magnetic flux intensity and welding current, and the resistance to the motion from friction. The solenoid may be placed on a chill mold (Fig. 1,a), or on the electrode (Fig. 1,b), and connected to an outside current source or to the welding circuit. The arrangement in Fig. 1, c is suggested for welding with wire, when the nozzle has to be placed in a narrow gap. The common electrode wire Св-08ГА (Sv-08GA) electrode wire and АН-8 (AN-8) flux were used in experiments at the Electric Welding Institute; ingots were cast by the electro-slag process into water-cooled copper chill mold of 50 mm diameter using direct and alternating current.
Macro-photographs of metal are included. The conclusion is made that 1. Forced electromagnetic mixing changes the shape of the pool and improves the structure of cast ingots and of weld metal, and appears to reduce the tendency to cracking in welds; 2. The process of electrode melting is

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A161/A130

Electromagnetic Mixing of the Slag and Metal Pool in the Electro-Slag Welding Process

changed by forced electromagnetic mixing, and the melting coefficient may be considerably raised (up to 30% or more). There are 4 figures.

ASSOCIATION: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im. Ye.O. Patona AN USSR (Electric Welding Institute "Order of the Red Banner of Labor" im. Ye.O. Paton of the Academy of Soiences of the UkrSSR)

SUBMITTED: March 22, 1960

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DUDKO, D.A., laureat Stalinskoy premii

Young age of an old discovery. Znan. ta pratsia No. 11:18-20 N '60.
(MIRA 14:4)

1. Zaveduyushchiy laboratoriyey novykh sposobov svarki Instituta elektrosvarki AN USSR im. Patona.
(Electric welding)

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A161/A133

1.2300 ab 1573

AUTHORS: Dudko, D.A., Lakiza, S.P.

TITLE: New welding possibilities with high-temperature arcs compressed by a gas stream

PERIODICAL: Avtomaticheskaya svarka, no. 11, 1960, 39-48

TEXT: The method is new, and the equipment for welding with compressed arc is just appearing in the USSR and abroad. The arc temperature may be raised to 30,000°C, and such an arc is already being used for cutting. VNIIAVTOGEN has developed and is producing an УДР-2-58 (UDR-2-58) cutter for metal, cutting with a so-called penetrating arc. Its burner nozzle is free of electric current, and the workpiece is the anode of the system. The Institut metallurgii im.Baykova (Institute of Metallurgy im.Baykov) has produced special arc heads ИМЕТ-105 (IMET-105) and ИМЕТ-106 (IMET-106) with discharge inside a protecting stream of argon or another gas shield between a tungsten electrode and a water cooled nozzle (Ref.2, "Svarochnoye proizvodstvo" No.9,

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1959, Kulagin and Nikolayev). The Electric Welding Institute im.Ye.O.Paton has experimented with different burners and found that those are to be preferred where the workpiece forms the anode. The burner design is shown (Fig.2); it is suitable for semi-automatic and automatic welding and a wide range of voltage and current (30-450 amp and 20-80 volt). An automatic unit is used on a ТС-17М (TS-17m) "welding tractor". The process is excited by a high-frequency discharge from an oscillator and an auxiliary 20-30 amp arc. Various shielding media have been tried for different metal compositions (argon, helium, nitrogen, hydrogen, natural gas, liquefied natural gas, water steam, alcohol vapors, water gas, carbon dioxide) and all proved applicable. Very low fusion depth was obtained with nitrogen for shielding in welding with copper wire on killed steel (Fig.5), and slightly deeper when the Св-08А (Sv-08A) wire was fused on killed Ст.3 (St.3) steel in carbon dioxide (Fig.6). Better mechanical properties appeard in weld metal produced with Св-08Г2А (Sv-08G2SA) wire in carbon dioxide. Welding with two passes using 1.2 mm filler wire for the second pass in argon on 30ХГСА (30KhGSA) steel resulted in quality seams and good weld metal. A particular feature of the process is that a wide reinforcement bead can be produced at very shallow fusion of the base metal. Splatter was completely absent in argon, carbon dioxide and wa-

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New welding possibilities...

ter steam. The weld surface was extraordinarily smooth. The arc length need not be accurately maintained as in common argon arc welding, and the arc stability was not affected by the travel speed of 7200 m/hr. The compressed arc may be given any desired shape - round, oval, rectangular or other by using different nozzle shapes or magnetic fields. A flat fan-shaped arc has been formed with magnetic field of 50 cycles (Fig.11,a); the arc may be rotated by a travelling magnetic field (Fig.11,b) forming a cone (handy for welding on pipes). In submerged arc processes the gas did not blow away the flux. The consumption of shielding gas is very low, between 0.2 and 5 liter/min. There are 12 figures and 4 Soviet references.

ASSOCIATION: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im.Ye. O.Patona AN USSR ("Order of the Red Banner of Labor" Electric Welding Institute im.Ye.O.Paton of the Academy of Sciences of the Ukrainskaya SSR)

SUBMITTED: July 6, 1960

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1.2300

AUTHORS: Dudko, D.A. and Lakiza, S.P.

TITLE: Welding 1Kh18N9T thin sheet steel by the pinched arc method

PERIODICAL: Avtomaticheskaya svarka, no. 7, 1961, 86-87

TEXT: Argon arc welding with a tungsten electrode is at the moment the most universal method of welding high-alloy sheet steel, but argon is scarce and expensive. According to available data, 3-4 liters argon per minute are required for butt welding 1 mm thick 1Kh18N9T (1Kh18N9T) steel without filler metal. The Institut elektrosvarki im. Ye.O. Patona (Electric Welding Institute im. Ye.O.Paton) has developed a new automatic pinched arc welding process which requires only 0.3 to about 0.5 liters of argon per min in welding 1Kh18N9T sheet steel. The "A-730" welding torch designed at the Institute can weld 1, 1.5 and 2 mm thick sheets. Welding is conducted using d.c. of direct polarity. The high quality of welds is shown in two photographs of a seam in a 1 mm sheet welded without filler metal and support, with 65 amp, 22 volts and 40 m/hr welding speed. The welded joints have the same strength as the base metal, they do not break when bent at an angle of 180° and have

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Welding 1Kh18N9T thin sheet .....

sufficient resistance against intercrystalline corrosion. The arc length can be more widely varied than is possible in conventional argon arc welding. There are 2 figures and 3 references: 2 Soviet-bloc and 1 non-Soviet bloc. The reference to the English-language publications reads as follows: J.C. Borland, W.G. Hull, Manual Open Air Welding of Reactive Metals, "British Welding Journal", p 427-434, No. 9, 1958.

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A006/A101

AUTHORS: Chernega, D.F., Dudko, D. A., Tyagin-Belous, O. S.

TITLE: Electric-slag heating and feeding of ingots

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 3, 1962, 42, abstract 3V262 ("Sb. nauchn. tr. Zhdanovsk. metallurg. in-t", 1961, no. 7, 266-275)

TEXT: In electric-slag heating the assembly of bottom plates is made as in conventional teeming. The liquid metal surface is filled with a thermite mixture after filling up the riser; during the burning of the mixture slag is being formed which promotes the formation of a slag pool from the synthetic mixture (CaO, CaF_2 and Al_2O_3). It is expedient that the slag contained 8 - 10% oxides of the metal alloying elements. The slag layer should be > 40 - 50 mm thick. Electric-slag heating can be conducted both on d-c and a-c. The magnitude of the power supplied is regulated by the immersion depth of the carbon electrode into the slag pool. The authors compared the properties of metal from conventional 3-ton 60XH(60KhN) steel ingots and of one that was subjected to electric-slag heating. Heating was performed on d-c at I = 1,000 amp; U = 50 v, heating time 90 minutes. The flux was composed of 50% CaO, 30% CaF_2; 20% SiO_2. Flux

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Electric-slag heating and feeding of ingots

consumption was 20 kg/t of steel. It was established that electric slag heating eliminates almost completely shrinkage cavities, improves density and macro-structure of the metal. Noticeable chemical heterogeneity of the metal is not observed in the ingot. Heating on d-c of direct polarity (minus on the electrode) promotes a reduction of the H content in the ingot. Simultaneously with a higher yield of finished product, electric-slag heating improves the mechanical properties of metal. In electric-slag feeding a consumable electrode is used which is made of the same metal as the ingot. Pouring gates or steel rods of 30 - 100 mm in diameter are used as electrodes. In electric-slag feeding, simultaneously with heating, the top section of the ingot is continuously filled-up with liquid metal of the consumable electrode. Flux consumption (60% CaO, 20% CaF_2, 20% Al_2O_3) is 15 - 25 kg/t of steel. The volume of the liquid pool for electric-slag feeding must be 4 - 5 times greater than for electric-slag heating. Electric-slag feeding makes it possible to reduce considerably zonal heterogeneity and the volume of the lower cone, and to raise the yield of finished product by 18 - 20%. The plastic properties of the metal in the top portion of the ingot are higher than in the lower portion.

P. Arsent'yev

[Abstracter's note: Complete translation]

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DUDKO, D.A.

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E071/E135

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AUTHORS: Yavoyskiy, V.I., Chernega, D.F., Dudko, D.A., Tyagun-Belous, G.S., Bekturganov, Sh.Sh., Bocharov, V.A., Agamalova, L.L., Molotkov, V.A., Yakobshe, M.Ya., and Potanin, Ye.M.

TITLE: Electrolytic phenomena in the process of electroslag heating of ingots

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, no.9, 1961, 32-43

TEXT: Electroslag heating of ingots is based on the ionic nature and structure of slag. On passing a current through the slag, situated on the surface of the shrinkage head, a considerable amount of heat is evolved, sufficient to maintain the slag and metal in the upper part of the ingot during its crystallisation in the molten state. The object of the present investigation was to elucidate the influence of the kind of electric current on the processes taking place during electroslag heating of ingots. It is advantageous to carry out the heating of the ingot tops in such

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Electrolytic phenomena in the process...

a manner that in addition to increasing the yield of good metal there should be an improvement in the metal quality resulting from the electrolytic effect and also from the transfer of a part of the segregating elements into the slag. The experiments were made with four ingots of a square cross-section, weighing 3.4 tons, of steel 10Г2СД (10G2SD), smelted in 75 ton basic open hearth furnaces. The electroslag heating was with direct and alternating current. For the first ingot the electrode introduced into the head part was connected to the cathode and the plus to the ingot (straight polarity); the second ingot was heated with direct current of reverse polarity (minus to the bottom of the mould, plus to the electrode in the head part); the third ingot was heated with a 50 c.p.s. alternating current; the fourth ingot was cast by the usual practice and was used as a blank experiment. The first three ingots were top poured through an intermediate funnel and the fourth ingot was bottom poured. A generator capable of producing 1000 A at 60 V was used for heating with direct current. The heating conditions were as follows: voltage 48 V, current for the first 60 minutes 950 A and then

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Electrolytic phenomena in the process... E071/E135

700 A; the duration of heating 90 minutes. The flux for the formation of slag consisted of 25% fluorospar, 45% finely crushed freshly ignited lime, 30% chamotte powder. The ingots were rolled into slabs 500 x 250 mm. Four templets were cut from each slab and then cut into strips from which test specimens were made. Non-metallic inclusions were determined metallographically and electrolytically. It was found that the distribution of non-metallic inclusions in the ingot was the most advantageous on heating it with direct current of "straight" polarity. This type of heating lowers chemical non-uniformity in comparison with ingots cast by the usual works technology and heated with alternating current, or direct current of reverse polarity. There is a tendency for sulphur to be shifted towards the positive pole, whereupon sulphur near the positive pole is distributed unevenly along the cross-section of the ingot in the form of segregation "spots". No shift of carbon towards the negative pole was established. During the heating with direct current of straight and reverse polarity, in addition to electrolytic phenomena, the Perrin-Tochinskiy effect leading to the refining

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of the metal of the head part of the ingots was observed. No noticeable effect of direct current on changes in the content and distribution of nitrogen in the rolled metal was observed. It was established that the content of hydrogen in the shrinkage head decreases during crystallisation of the ingot heated with a direct current of reverse polarity and increases with direct polarity (minus on the electrode). The mechanical properties of the metal of the ingot teemed with heating by current of direct polarity are most uniform throughout the whole volume of the slab. The specific gravity of the metal of all the ingots was almost the same. The pickling ability of the metal (weight loss of cylindrical specimens in a solution of 65 wt. parts of HCl, 25 wt. parts of H_2SO_4 and 10 wt. parts of water at 70 °C during 40 minutes) along the whole slab is the highest on heating with direct current of "straight" polarity and lowest on heating with direct current of reverse polarity. On heating with alternating current of an industrial frequency the quality of the ingot metal was better than that of the "blank" ingot and was nearly the same as on heating with direct current of "straight" polarity.

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Moscow Inst. Steel

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12310 1513, 2801, 2208

AUTHORS: Dudko, D.A., Rublevskiy, I.N., Fedʼko, I.V., and Lebedev, B.F.

TITLE: New arrangement for electro-slag welding with a consumable nozzle

PERIODICAL: Avtomaticheskaya svarka, no. 9, 1961, 60-64

TEXT: An arrangement is suggested, consisting of a new kind of "melting nozzle" (filler metal plate), and a simple lifting system for the shoes. The new "nozzle" (Fig.1) is insulated over its entire surface to prevent contact with the metal being joined, and is provided with ducts inside that are filled with a measured quantity of flux for refilling the diminishing slag bath in the process. The shoe-lifting system (Fig.2) includes a spring (3) pressing the right and left shoe (1) to the gap walls, and two thin steel plates (4) insulated with common enamel. The "nozzle" (5) moves between these plates and resilient fixing pins (6). The shoes "walk" upward when the operator rocks one of the two handles (7) as indicated by the "p" arrows. The arrangement eliminates the conventional fixing inserts in the

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D040/D113

New arrangement for electro-slag welding ....

gaps that obstruct the way for slag refills in the process and cause difficulties. The operator has only to rock a handle periodically in the process after the slag bath is formed. It has been tested in practical use in welding joints in 20-50 mm thick blast furnace shell sections at the construction site. A photograph shows it in operation. Details of the welding process are included. The "nozzle" and the shoe—lifting system need not be used together only. They may be combined separately with any other electro-slag process sets. The arrangement makes electro-slag welding possible in spots that would be inaccessible otherwise. Joining thick-wall tubes on site (where tubes cannot be rotated) is another possible application. Wire can be used instead of the "melting nozzle", and rocking of the wire prevented simply by placing the wire guide outside the shoes. There are 6 figures.

ASSOCIATION: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im. Ye.O.Patona AN USSR (Electric Welding Institute "Order of the Red Banner of Labor" im. Ye.O.Paton, AN UkrSSR)

SUBMITTED: May 12, 1961

Card 2/2

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

34460
S/125/62/000/003/005/008
D040/D113

1, 2300

AUTHORS: Dudko, D.A., and Rublevskiy, I.N.

TITLE: On the nature of the rectifier effect in the electro-slag process

PERIODICAL: Avtomaticheskaya svarka, no. 3, 1962, 40-48

TEXT: Technical details and results of an experimental investigation of the "rectifier effect", previously discovered by the authors in electro-slag welding (Ref.1: "Avtomaticheskaya svarka", no. 3, 1958) are given. The effect consists in the appearance of a clearly expressed d.c. component in the a.c. process and the increase in this component until the current is fully rectified, as well as the rapid extinction of the process with d.c. at the usual 30-50 v voltage, when a nonconsumable electrode serves as anode. The experiments included the use of a d.c. generator switchable to different performance, a water-cooled nonconsumable copper electrode as well as a graphite electrode,, and direct and reverse polarity. The effect was found to be connected with the phenomena in the space at the electrode, occurring

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On the nature ...

due to gas liberation and reduced conductivity of the system, analogous to the anode effect observed in the electrolysis of molten salts; however, the similarity is incomplete, and further investigations are required to determine why this effect occurs in the electro-slag process. The authors refute B.I. Maksimovich's theory (Ref.2: "Avtomaticheskaya svarka", no.4, 1961) that the effect is caused by gas discharge between the slag pool and the water-cooled mold wall, and is comparable to arc discharge. Conclusions: (1) It was experimentally proved that the conductivity of the system in the process with nonconsumable copper electrode or a noncooled graphite electrode is better when the nonconsumable electrode serves as the cathode. This also applies to processes involving the use of d.c. and a.c. In the case of alternating current, a d.c. component appears in the circuit, and the nonconsumable electrode (the rod or the crucible) becomes the cathode in the circuit of the d.c. component. (2) The appearance of the rectifier effect in the electro-slag process largely depends on the flux composition, the electric process parameters, the slag pool depth, the current density on the electrode, etc. (3) The rectifier effect in the electro-slag process

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On the nature ...

cannot be explained by Maksimovich's arc discharge theory. (4) The stated regularities in conductivity changes in the system are determined by the appearance of the gas phase at the anode. There are 7 figures and 6 Soviet references.

ASSOCIATION: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im. Ye.O.Patona AN USSR (Electric Welding Institute "Order of the Red Banner of Labor" im. Ye.O.Paton, AS UkrSSR)

SUBMITTED: July 7, 1961

Card 3/3

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

IAVOISKI, V.I. [Yavoyskiy, V.I.]; CERNEGA, D.F. [Chernega, D.F.]; DUDKO, D.A.; TEAGUN-BELOUS, G.S. [Tyagun-Belous, G.S.]; BEKTURSUNOV, S.S. [Bekturaunov, Sh.Sh.]; BOCIAROV, V.A. [Bocharov, V.A.]; AGAMALOVA, L.L.; MOLOTKOV, V.A.; IAKOBSE, R.I. [Yakobshe, R.Ya.]; POTANIN, E.M. [Potanin, Ye.M.]

Electrolytic phenomena during the slag electric heating of the ingots. Analele metalurgie 16 no.2:5-18 Ap-Je '62.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

S/133/62/000/007/002/014
A054/A127

AUTHORS: Yavoyskiy, V.I., Professor, Doctor of Technical Sciences; Bekturs-unov, Sh.Sh., Engineer; Chernega, D.F.; Tyagun-Belous, G.S.; Dudko, D.A.; - Candidates of Technical Sciences

TITLE: Electroslag heating and additional feeding in casting 10Г2СД (10G2SD) slabs for sheet rolling

PERIODICAL: Stal', vol 22 no. 7, 1962, 611 - 615

TEXT: The new "electroslag-heating" method described by G.S. Tyagun-Belous and D.A. Dudko (Ref. 1, Avtomaticheskaya svarka, no. 9, 10, 1956, no. 8, 11, 1958) eliminates the drawbacks in the usual methods of reducing metal losses in the riser head. In the upper part of the ingot mold a mixture of 45% crushed chamotte and 55% fine-graded coke is spread on the metal surface, in an amount of 2 kg/ton steel, then 14 kg/ton slag forming materials are added. Through the layer forming from these elements which smelts and becomes electro-conductive, a current of industrial frequency is led. The slag layer developing in the dozzle of the mold is 80 - 100 mm thick. In the electroslag-heating method

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Electroslag heating and additional feeding in ....

carbon electrodes (50 - 150 mm in diameter) are used. If this process is combined with additional feeding, 80 - 100-mm diameter self-baking electrodes of the same grade that is being smelted are used. The ingots cast by the first method weighed 7.65 tons, those of the combined method 7.3 - 7.4 tons, while the standard ingots were 8.2 tons. The slag forming elements used were chamotte powder, lime, fluorite. Shrinkage cavities were not found in the ingots cast with electroslag heating, but the highest density was obtained, when electroslag heating and additional feeding were applied. The test ingots and one control ingot were examined for chemical nonhomogeneity, the amount of residual hydrogen, pickling and mechanical properties. The positive liquation of carbon was 7% in the ingot heads subjected to additional feeding, 2% in case of electroslag heating, and 200% for the control ingot. The corresponding values for the sulfur content were 0.0 and 10% and for phosphorus 0.5 and 50%. The decrease of liquation can be explained by the activity of the slag layer, which absorbs the additives from the smelted metal at their interface. This process is considerably intensified by the convective flows circulating at a rate of about 4 m/min in the ingot mold during crystallization, entraining liquid metal from the lower, solidifying parts of the ingot upward to the riser, i.e., to the electrical-

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

Electroslag heating and additional feeding in ....

ly heated slag layer. For the same reason the hydrogen content of the ingots also decreases. In the test ingots produced with electroslag heating the hydrogen content was 4.09 $cm^3/100$ g, in the ingot with additional feeding 4.05 $cm^3/100$ g, and in the control ingot 4.98 $cm^3/100$ g. The effect of convective flows was investigated by radiometry, using a P^{32}-50 millicurie-isotope. As to mechanical properties, the highest values were found in ingots treated by electroslag heating, without additional feeding: σ_B = 50 - 56 and σ_s = 37 - 42 kg/mm^2; in the riser part of the ingot the highest mechanical parameters were obtained for ingots with additional feeding: σ_B = 50 - 55, σ_s = 40 - 45 kg/mm^2. The effect of the quality of current on the properties of the ingots was also studied by means of a d-c welding generator (1,100 amp, 40 v) and 3.4 ton 10G2SD ingots. The highest parameters and the most uniform distribution of elements were found in ingots heated by direct current with a direct polarity. Similar results can be obtained also with alternating current of industrial frequency, which is important from the practical point of view. If electroslag heating of the riser is applied, the saving in metal is 6 - 7%; if additional feeding is also applied, it is 10 - 11%. The riser volume can be reduced by 3 - 5%. It is also possible to dispense with the riser completely. The methods should be ap-

Card 3/4

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A054/A127

Electroslag heating and additional feeding in ....

plied mainly for carbon steel and low-alloy steel ingots for heavy-duty products. There are 3 figures.

Card 4/4

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

SAPIRO, L.S.; DUDKO, D.A., kand. tekhn. nauk, retsenzent; RAGAZINA, M.F., inzh., red. izd-va; GORDEYEVA, L.P., tekhn. red.

[Welding in a water vapor atmosphere] Svarka v srede vodianogo para. Moskva, Mashgiz, 1963. 93 p. (MIRA 16:4)
(Electronic welding) (Protective atmospheres)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

YAVOYSKIY, V.I.; BEKTURSUNOV, Sh.Sh.; DUDKO, D.A.

Effect of electric slag heating and feed maintenance on the distribution of nitrogen, oxygen and nonmetallic inclusions in steel ingots. Izv. vys. ucheb. zav.; chern. met. 6 no.7:47-51 '63. (MIRA 16:9)

1. Moskovskiy institut stali i splavov.
(Steel ingots—Testing) (Gases in metals) (Steel—Inclusions)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

YAVOYSKIY, V.I.; BEKTURSUNOV, Sh.Sh.; BELYAYEV, Yu.P.; MOLOTKOV, V.A.; DUDKO, D.A.

Metal distribution by consumable electrodes in the volume of an ingot during additional electric slag feeding. Avtom. svar. 16 no.11:40-43 N '63. (MIRA 17:1)

1. Moskovskiy institut stali i splavov (for Yavoyskiy).
2. Karagandinskiy politekhnicheskiy institut (for Bektursunov).
3. Zhdanovskiy metallurgicheskiy zavod imeni Il'icha (for Belyayev, Molotkov). 4. Institut elektrosvarki imeni Ye.O. Patona AN UkrSSR (for Dudko).

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, D.A.; POKHODNYA, I.K.

Getting acquainted with United States welding techniques. Avtom. svar. 17 no.1:82-88 Ja '64. (MIRA 17:3)

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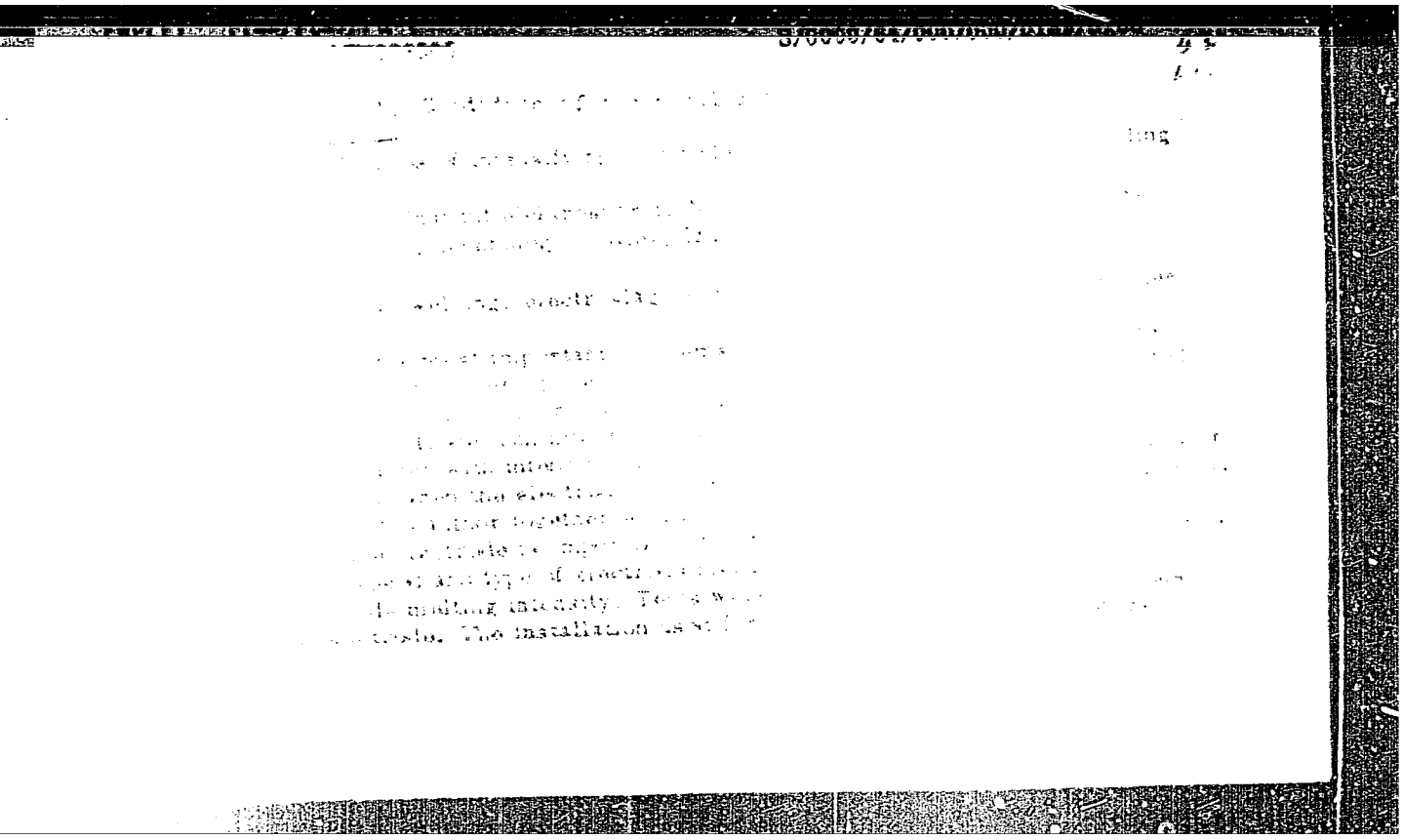

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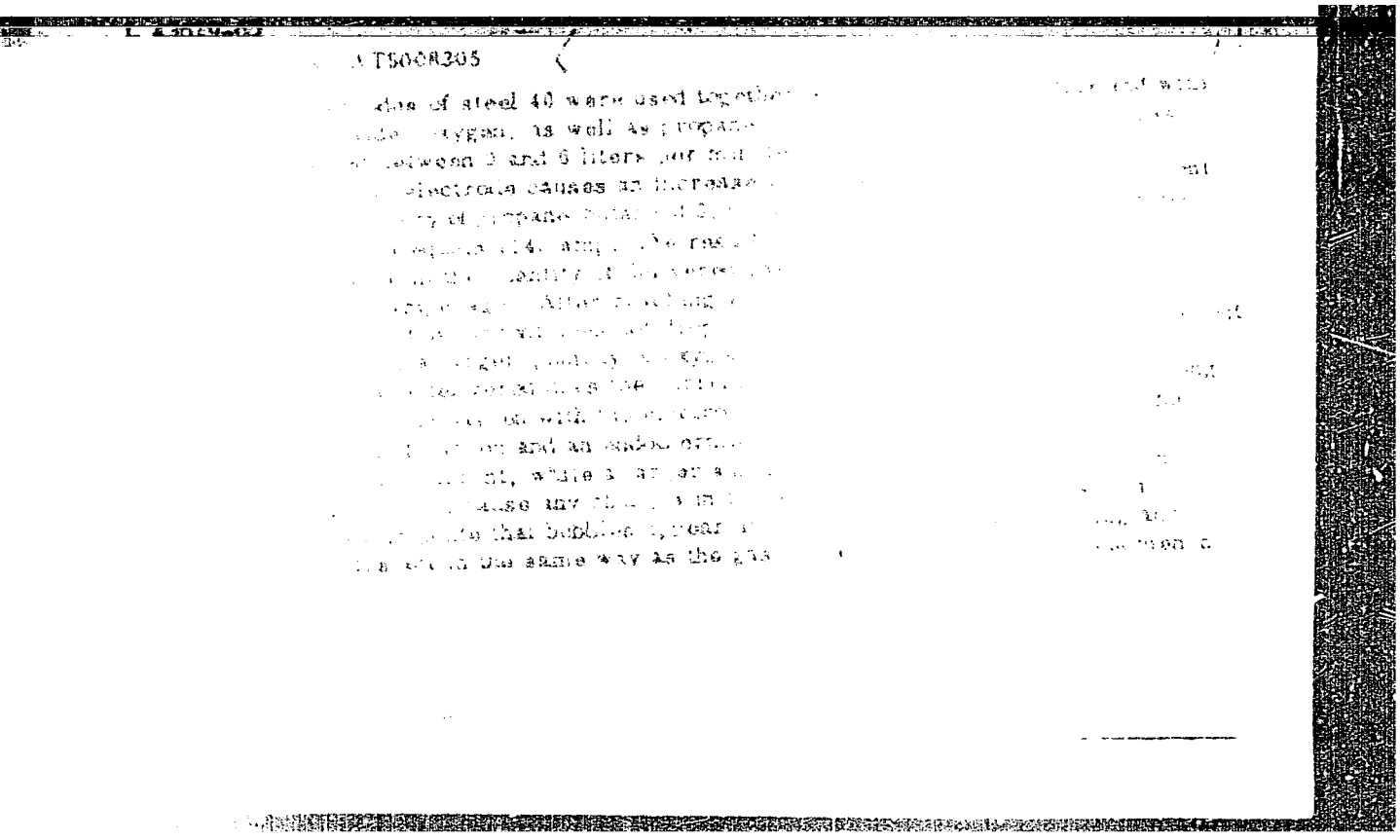

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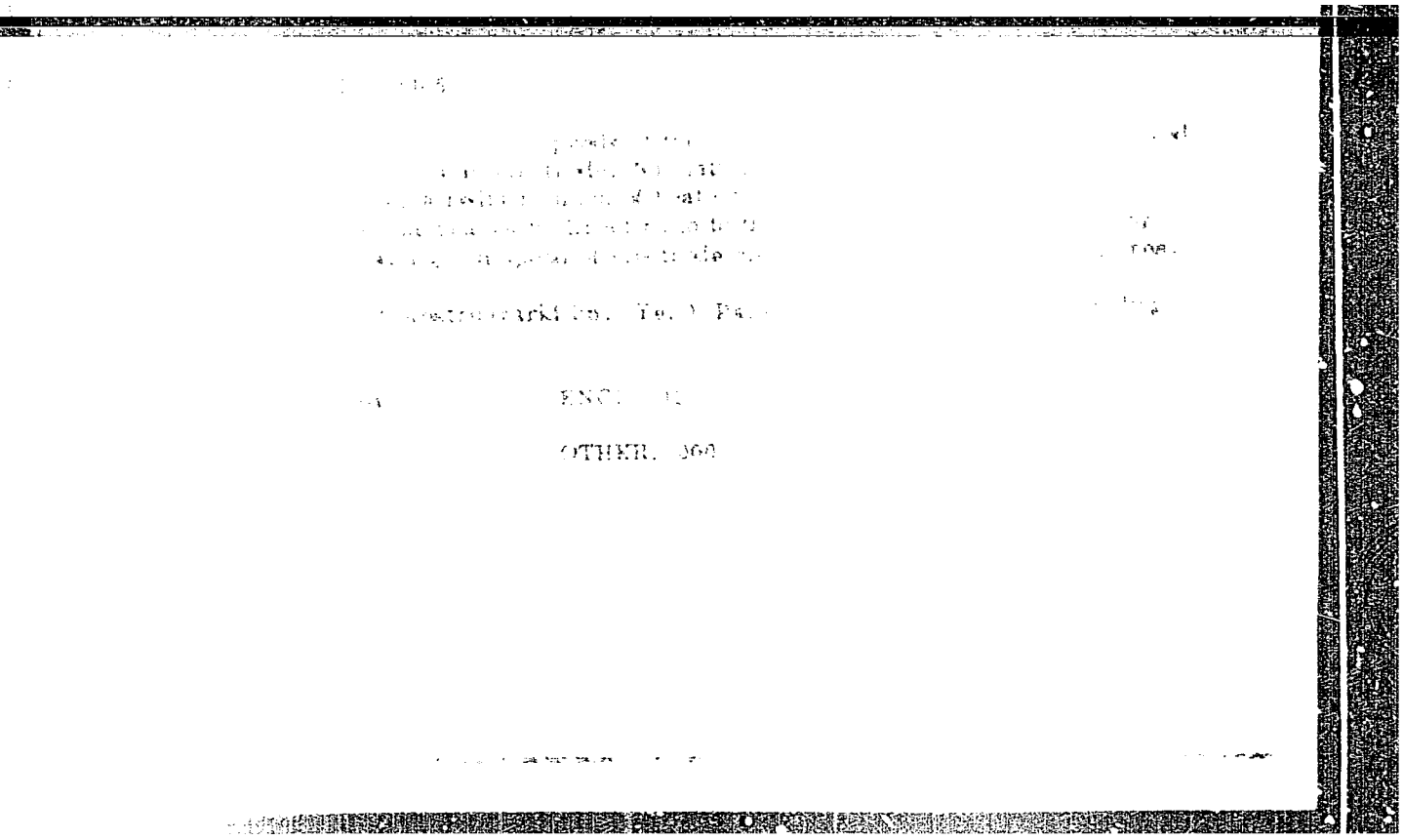

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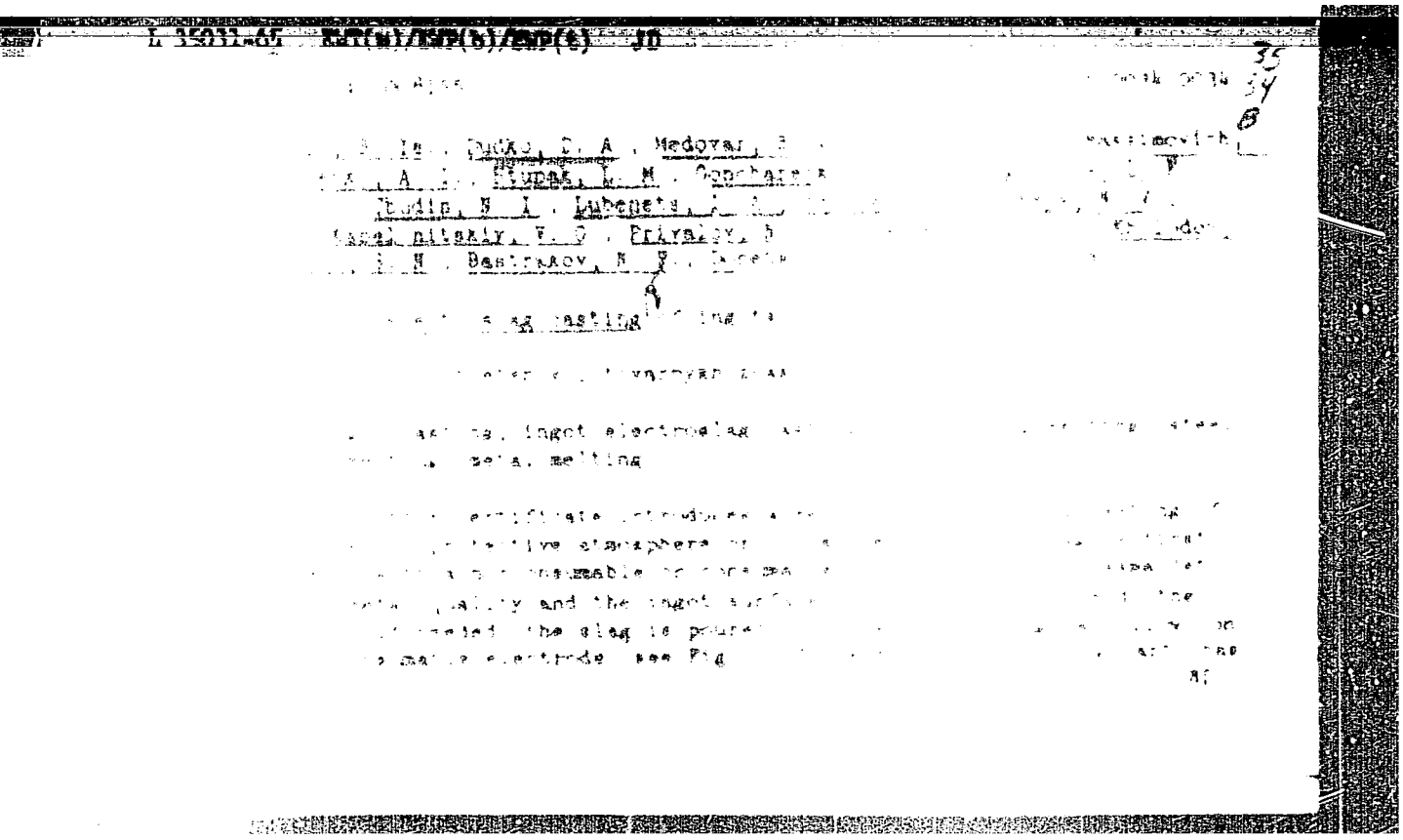

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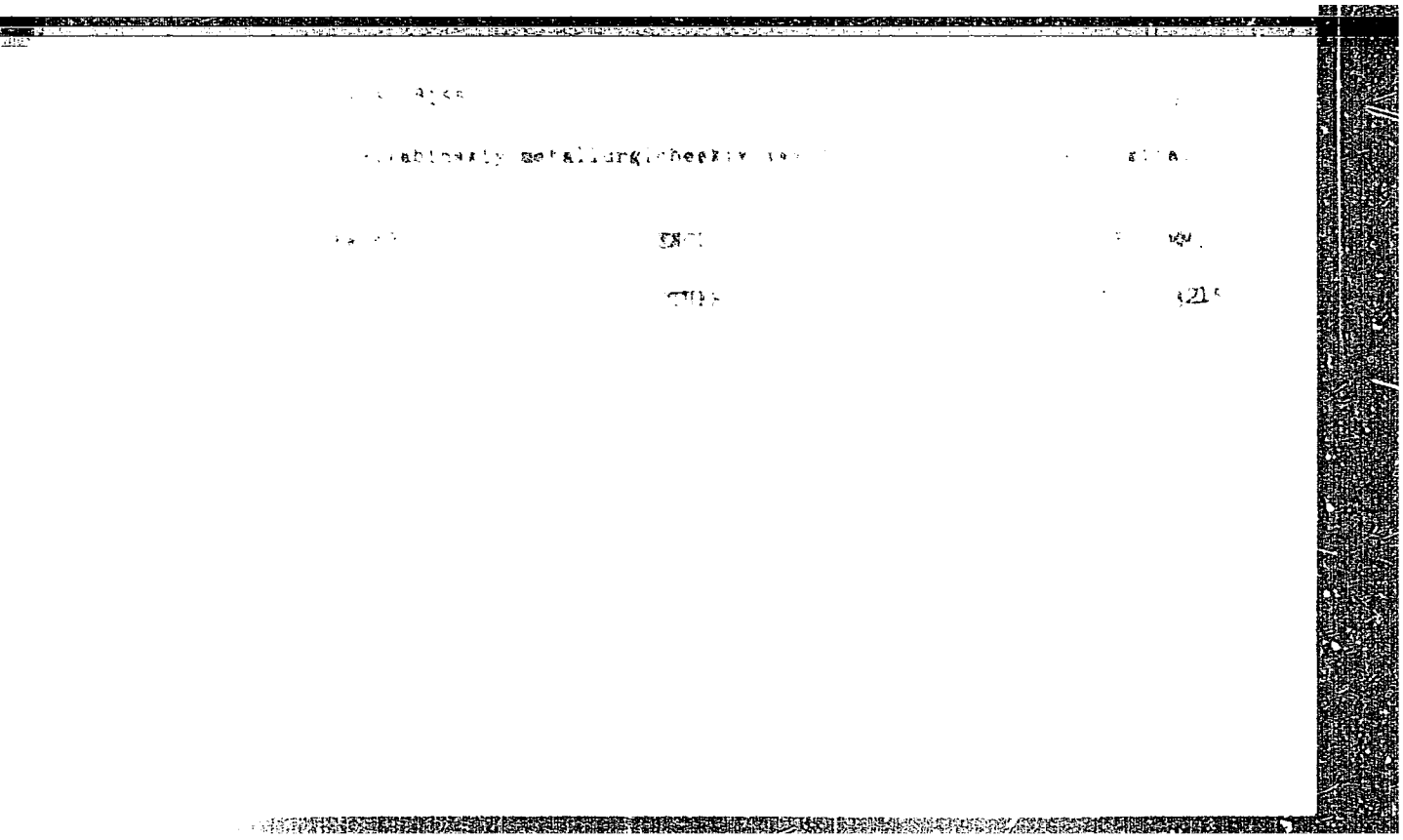

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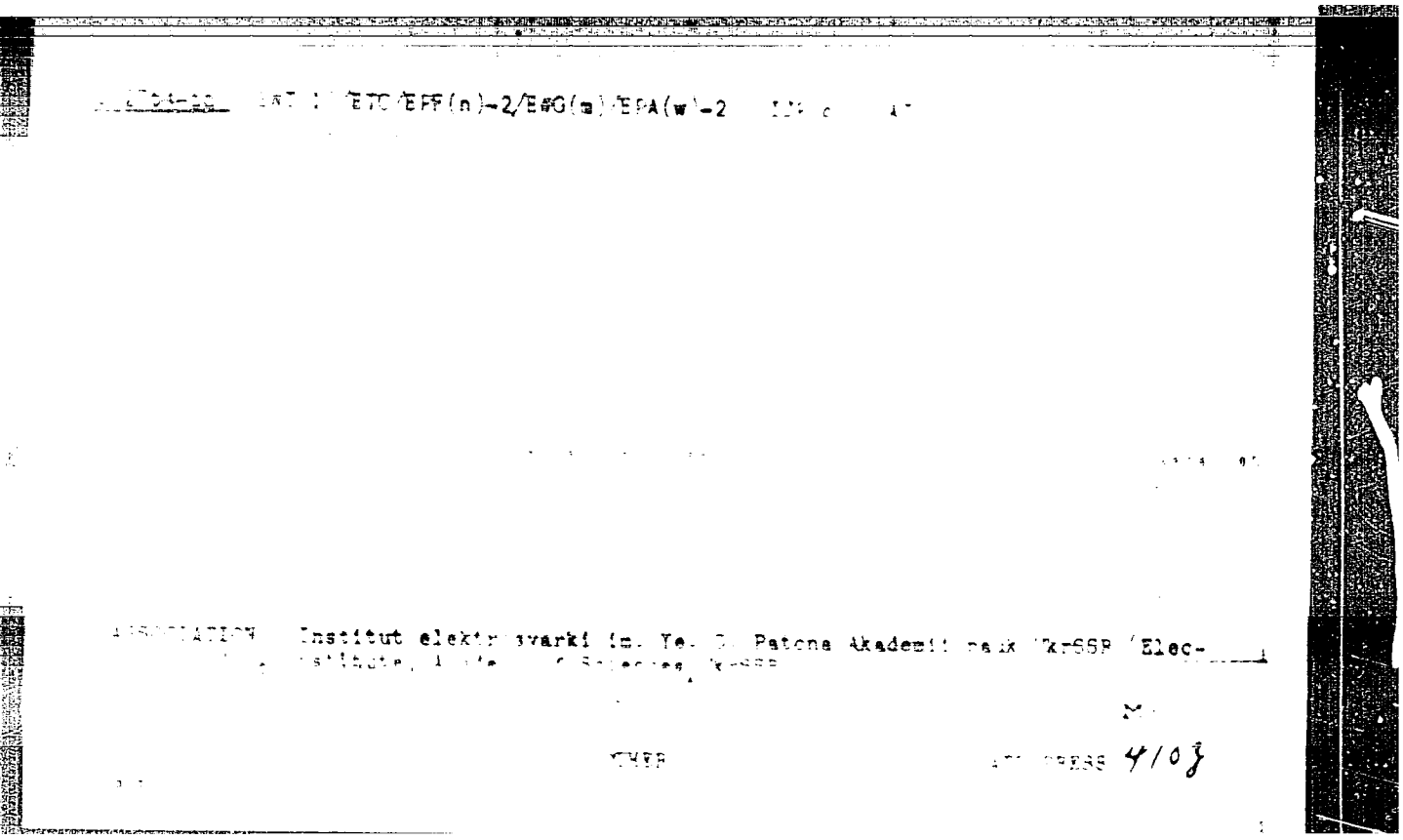

AUTHOR: [illegible] ETC/EFF(n)-2/EWG(m)/EPA(w)-2 [illegible]

ORGANIZATION: Institut elektrosvarki im. Ye. O. Patona Akademii nauk Ukr-SSR (Elec-[illegible]
[illegible] Institute, [illegible] of Sciences, Ukr-SSR

[illegible] SOURCE: [illegible] 4/0 3

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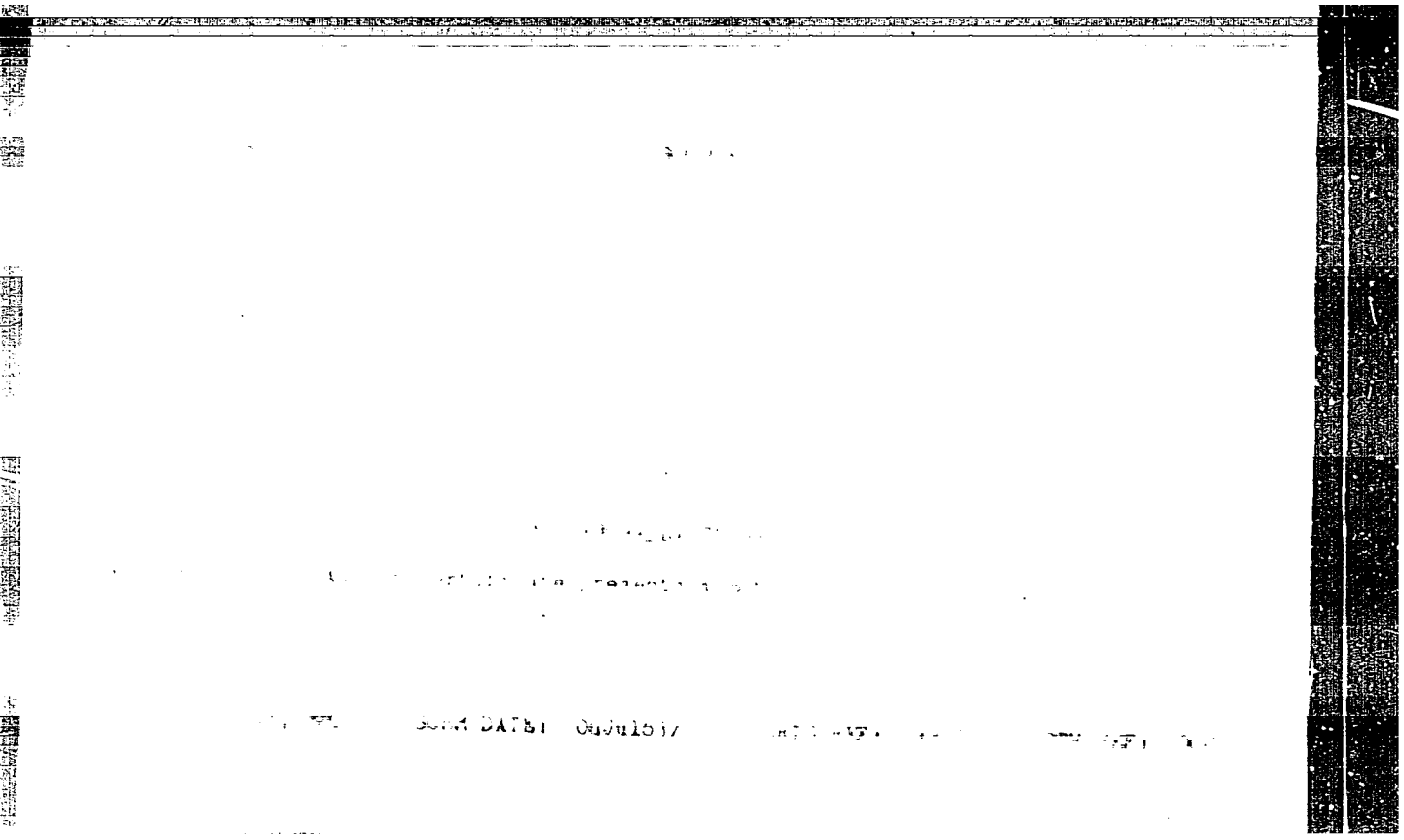

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

ACC NR: AP5024302

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 15 1965, 66

TOPIC TAGS: welding, automatic welding, resistance

[illegible] device ensures an automatic welding [illegible] and turning the electrodes. A pro-

SUBM DATE: 13Apr62/ ATD PRESS

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

[announced

by Electric Welding Institute im. Ye. O. Paton (Institut Elektrosvarki)]

...teniya, promyshlennyye obraztsy, ... 1966, 57

welding, metal rolling, sandwich rolling

... Certificate has been issued ... composite

... electroslag welding. To save on stainless steel, lower the thickness of the clad layer, and simplify the welding procedure, it is suggested that the process be begun

Card 1/2 UDC: 621.791.793:621.771 ...

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

L 39612-66 EWT(d)/EWT(m)/EWP(k)/EWP(h)/EWP(v)/EWP(t)/EWT/EWP(l) SC/EW/JD/

ACC NR: AP6002894 SOURCE CODE: UR/0286/65/000/024/0050/0050

INVENTOR: Strekal', L. P.; Dudko, D. A.; Nazarenko, O. K.

ORG: none

TITLE: Method of automatic following the joint in electron beam welding. Class 21, No. 177006

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 24, 1965, 50

TOPIC TAGS: electron beam welding, secondary electron emission, automatic control, electron interaction, metal joining, electron beam equipment

ABSTRACT: 1. The method of automatic following of the joint in electron beam welding with the application of an electromagnetic deflection system that shifts the electron beam with regard to the workpiece, is characterized by the fact that in order to eliminate the effect of the material and of the workpiece shape on the tracking accuracy, use is made of the secondary electron emission, occurring during the reaction of the electron beam with the surface of the workpiece, in controlling the deflection system.

2. The method, described in paragraph 1, is characterized by the fact that in order to improve the tracking accuracy, use is made of the secondary electron emission, occurring during the reaction of the auxiliary sharply focused electron beam of low intensity with the surface of the workpiece, in controlling the deflection system.

Card 1/2 UDC: 621.791.72.08

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

L 39642-66

ACC NR: AP6002894

3. The method, described in paragraphs 1 and 2, is characterized by the fact that in order to simplify the apparatus for shifting the main and auxiliary electron beams use is made of a common electromagnetic deflection system to shift the beams in a lateral direction with respect to the edges of the workpiece.

SUB CODE: 13,20/SUBM DATE: 03Nov62/

Card 2/2 S

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

L 43826-66 EWT(d)/EWT(m)/EWP(v)/T/EWP(t)/ETI/EWP(k)/EWP(h)/EWP(l) IJP(c)
ACC NR: AP6030265 (N)JD/HM/HW SOURCE CODE: UR/0125/66/000/008/0001/0005

AUTHOR: Paton, B. Ye.; Lakomskiy, V. I.; Dudko, D. A.; Zabarilo, O. S.; Pryanishnikov, I. S.; Topilin, V. V.; Klyuyev, M. M.

ORG: [Paton; Lakomskiy; Dudko; Zabarilo] Electric Welding Institute im. Ye. O. Paton, AN UkrSSR (Institut elektrosvarki AN UkrSSR); [Pryanishnikov; Topilin; Klyuyev] Elektrostal' Plant im. I. P. Tevosyan (Zavod "Elektrostal'")

TITLE: Plasma arc melting of metals and alloys

SOURCE: Avtomaticheskaya svarka, no. 8, 1966, 1-5.

TOPIC TAGS: plasma arc, metal melting, plasma arc melting, plasma arc furnace

ABSTRACT: A plasma arc furnace (see Fig. 1) for melting metals and alloys has been designed and built. The furnace is equipped with a PDM-3 plasma gun operating with a power input of 5—50 kw at a working voltage of 40—80 v and an open circuit voltage of 120 v. Ingots are 50—100 mm in diameter and up to 600 mm long. Several metals and alloys were melted in this furnace. It was found that the surface quality of the ingots was very high, there were no shrinkage holes, and the content of gaseous impurities was reduced significantly. For instance, the oxygen content in an NP-3 nickel (99.3% Ni+Co) dropped from $1.77 \cdot 10^{-2}$% to $3-7 \cdot 10^{-4}$% and the density of the metal increased from 8.804 to 8.8424 g/cm^3. The ingots were cold rolled from 75 mm to 0.10 mm with only one process annealing. In comparison with the original alloy, the formability improved 2—3 times, the rupture strength 40—60%, and elongation and

Card 1/2 UDC: 621.791:669.187.6

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ACC NR: AP6030265

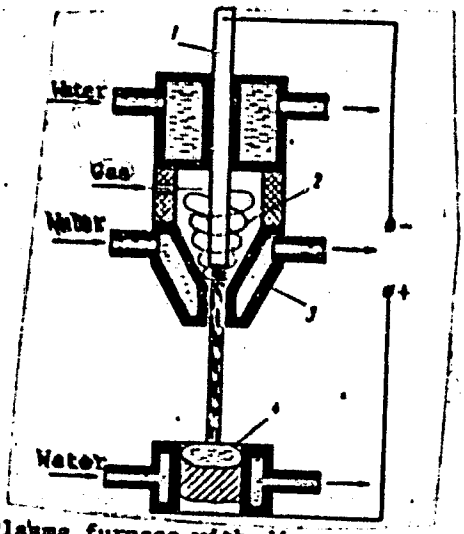

Fig. 1. Plasma furnace with direct action plasma gun

1 - Tungsten cathode; 2 - argon flow; 3 - water cooled nozzle; 4 - molten metal.

reduction of area 20—30%. Orig. art. has: 6 figures. [TD]

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Card 2/2 fv

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

L 11207-67 EWT(m)/EWP(t)/ETI IJP(c) JD/JW/JG/AT

ACC NR: AP6030802 SOURCE CODE: UR/0185/66/011/009/0950/0956

AUTHOR: Polushkin, I. M. -- Polushkin, I. N.; Dudko, D. A.

ORG: Kiev State University im. T. H. Shevchenko (Kyyvs'kyy derzhuniversytet)

TITLE: Effective cross section of electron scattering in plasma, helium, and argon with a cesium vapor admixture

SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 11, no. 9, 1966, 950-956

TOPIC TAGS: electron scattering, scattering cross section, resonator, gas discharge plasma

ABSTRACT: The authors measured the effective cross section of electron scattering by neutral atoms of a binary gas discharge plasma in inert gases of He and Ar with an admixture of Cs vapor at a pressure of ~ 2mm Hg. Measurements were carried out by a method employing a superhigh-frequency resonator in the three-centimeter band and by a method of plasma conductivity in a d-c network. The cross section of electron scattering equals 6×10^{-16} cm^2 for plasma in He, 2×10^{-16} cm^2 for plasma in Ar, and 2×10^{-14} cm^2 for plasma in Cs. Dependences of the electric-field strength and plasma conductivity in He—Cs and Ar—Cs

Card 1/2

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L 01207-67

ACC NR: AP6030802

3

on the Cs vapor pressure are given for various electric-current densities. The authors thank Professor N. D. Morgulis for his guidance in the study and graduate student Yu. Ya. Polishchuk for taking part in the work. Orig. art. has: 7 figures and 3 formulas. [Based on authors' abstract] [NT]

SUB CODE: 20/ SUBM DATE: 23Nov65/ ORIG REF: 008/ OTH REF: 005/

Card 2/2 blg

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

ACC NR: AP6035713 (N) SOURCE CODE: UR/0413/66/000/019/0058/0058

INVENTOR: Maksimovich, B. I.; Dudko, D. A.; Khrundzhe, V. M.

ORG: none

TITLE: Electroslag welding of low-melting metals and alloys with high heat conductivity. Class 21, No. 186586

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 19, 1966, 58

TOPIC TAGS: electroslag welding, ~~low melting metal welding, high~~ heat conductivity ~~metals~~ low temperature metal, metal property

ABSTRACT: This Author Certificate introduces a method of electroslag welding of low-melting metals and alloys with high heat conductivity. To obtain high-quality welds, the lower part of a nonconsumable electrode, which is immersed in a slag bath, is enclosed in a refractory tube and in this way is electrically insulated from the molten slag leaving only the face of the electrode in contact with the slag.

SUB CODE: 13/ SUBM DATE: 13May65/

Card 1/1 UDC: 621.791.793

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

ACC NR: AP7002998 (A,N) SOURCE CODE: UR/0413/66/000/024/0103/0103

INVENTOR: Dudko, D.A.; Lakiza, S.P.; Azbukin, V.D.

ORG: none

TITLE: Plasma torch. Class 49, No. 189669 [Electric Welding Institute im. E.O. Paton (Institut elektorsvarki)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 24, 1966, 103

TOPIC TAGS: plasma, plasma treatment, plasma torch SPRAYING, PLASMA DEVICE

ABSTRACT:

This Author Certificate introduces a plasma torch for treatment of materials. The torch consists of a housing containing a cathode and a nozzle-anode, and an electromagnetic system for controlling the plasma jet. To provide uniform heating of the treated article, the cathode is made in the shape of a ring mounted in the housing, and the nozzle is made out of two concentric sleeves whose cross section corresponds to that of the treated article.

[TD]

SUB CODE: 13, 20/ SUBM DATE: 22Mar65/ ATD PRESS: 5115

Card 1/1 UDC: 621.791.755.034

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

ACC NR: AP7004793 SOURCE CODE: UR/0413/67/000/001/0128/0128

INVENTOR: Dudko, D. A.; Lakiza, S. P.; Bosyy, A. V.

ORG: none

TITLE: Plasma gun for metals. Class 49, No. 190186 [announced by the Electric Welding Institute, im. Ye. O. Paton (Institut elektrosvarki)

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 1, 1967, 128

TOPIC TAGS: plasma gun, ~~low pressure plasma gun~~ metalworking machinery

ABSTRACT:

This Author Certificate introduces a plasma gun for treating metals in vacuum with a low pressure constricted arc. The gun (see Fig. 1) includes a housing, a cathode subassembly, and a nozzle, insulator, and vacuum fitting.

Card 1/3 UDC: 621.791.755.03

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

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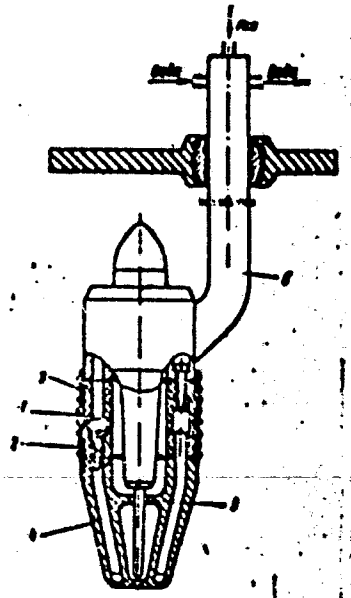

Fig. 1. Plasma gun

1 - Insulator; 2 - screen; 3 - water coolant ducts; 4 - nozzle; 5 - screen baffle; 6 - vacuum fitting.

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ACC NR: AP7004793

To prolong the service life and simplify the operation of the gun, the insulator is equipped with an exchangeable protective screen and is water cooled. The nozzle has a baffle and an exchangeable refractory-metal insert. The vacuum fitting is mounted eccentrically to the gun body. Orig. art. has: 1 figure. [ND]

SUB CODE: 20,13/ SUBM DATE: 09Jun66/ ATD PRESS: 5117

Card 3/3

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, D.I., inzh.

Device for remote switching of outdoor loudspeakers. Trudy Sekt.radiofik. i VRS Ukr. NTORiE no.3:17-20 '56. (MIRA 12:1)
(Loudspeakers) (Remote control)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, D.I., insh.; MAREK, V.F., tekhnik

UPTS universal two-way semiautomatic telephone unit. Trudy Sekt.radiofik. i VRS Ukr. NTORIE no.3:31-34 '56. (MIRA 12:1)
(Telephone--Equipment and supplies)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, G.

We are creating educational equipment and facilities. Prof. tekh. obr. 21 no.11:28 N '64 (MIRA 18:2)

1. Starshiy inzh. Dnepropetrovskogo instituta tekhnicheskogo obucheniya rabochikh.

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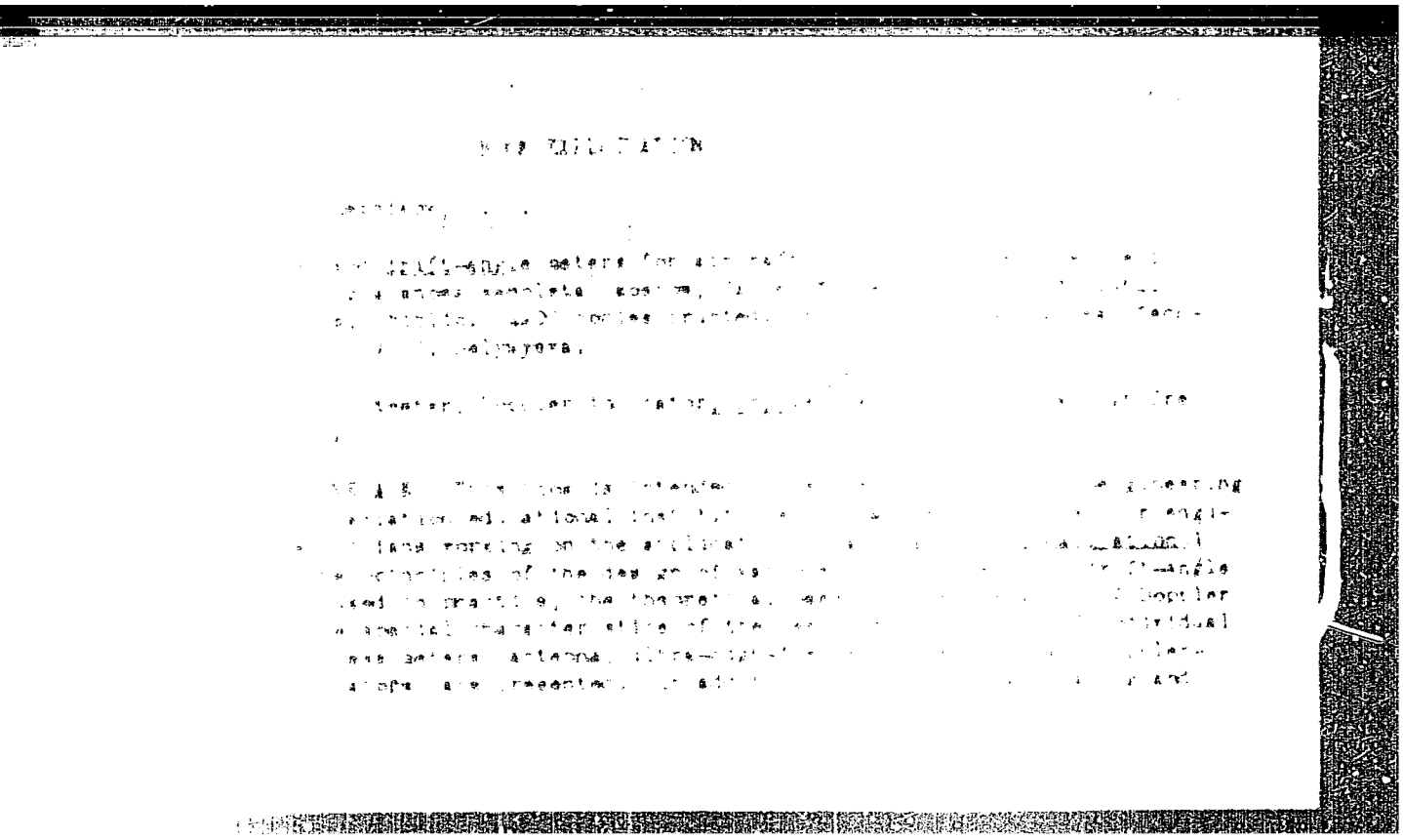
"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4



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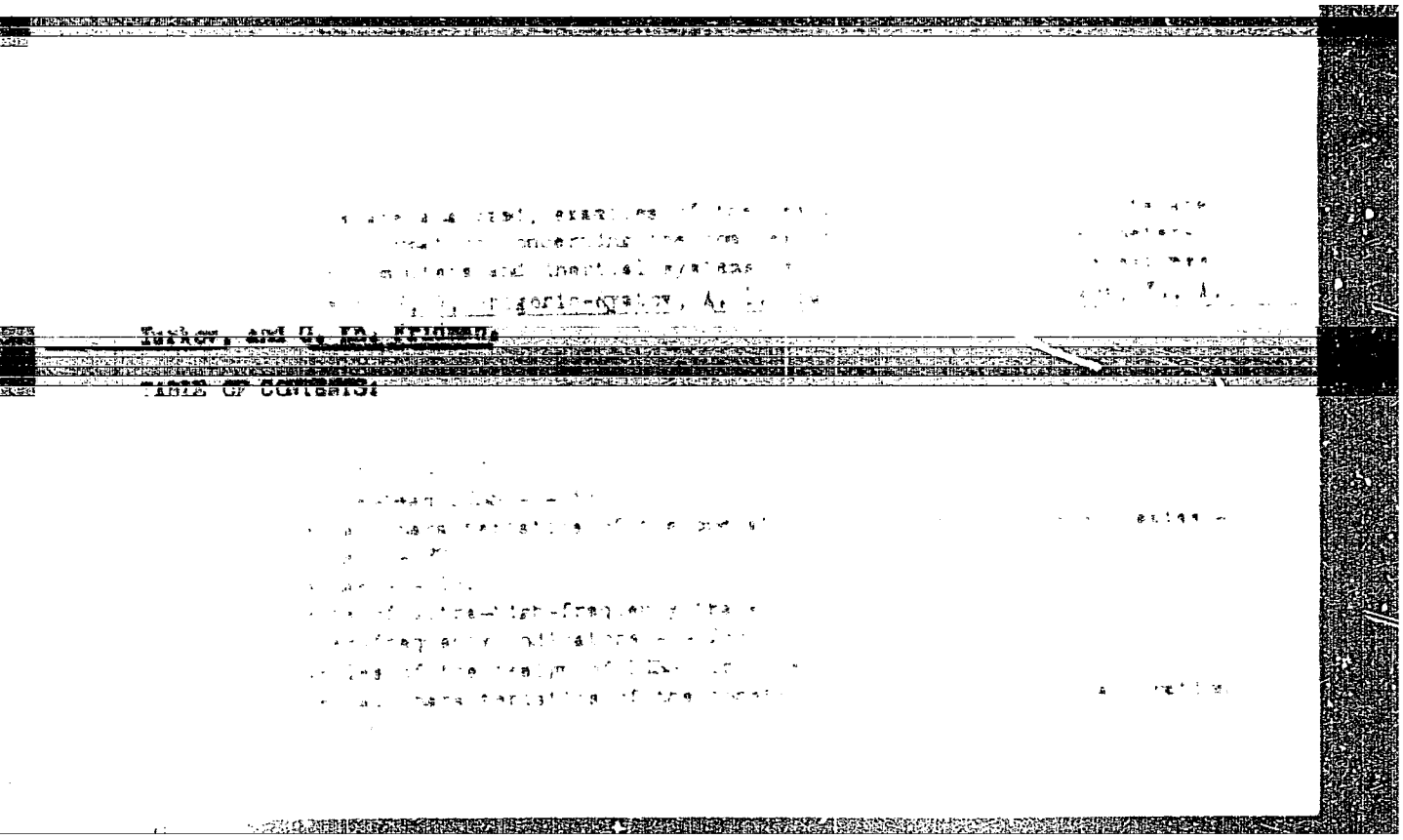
"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4



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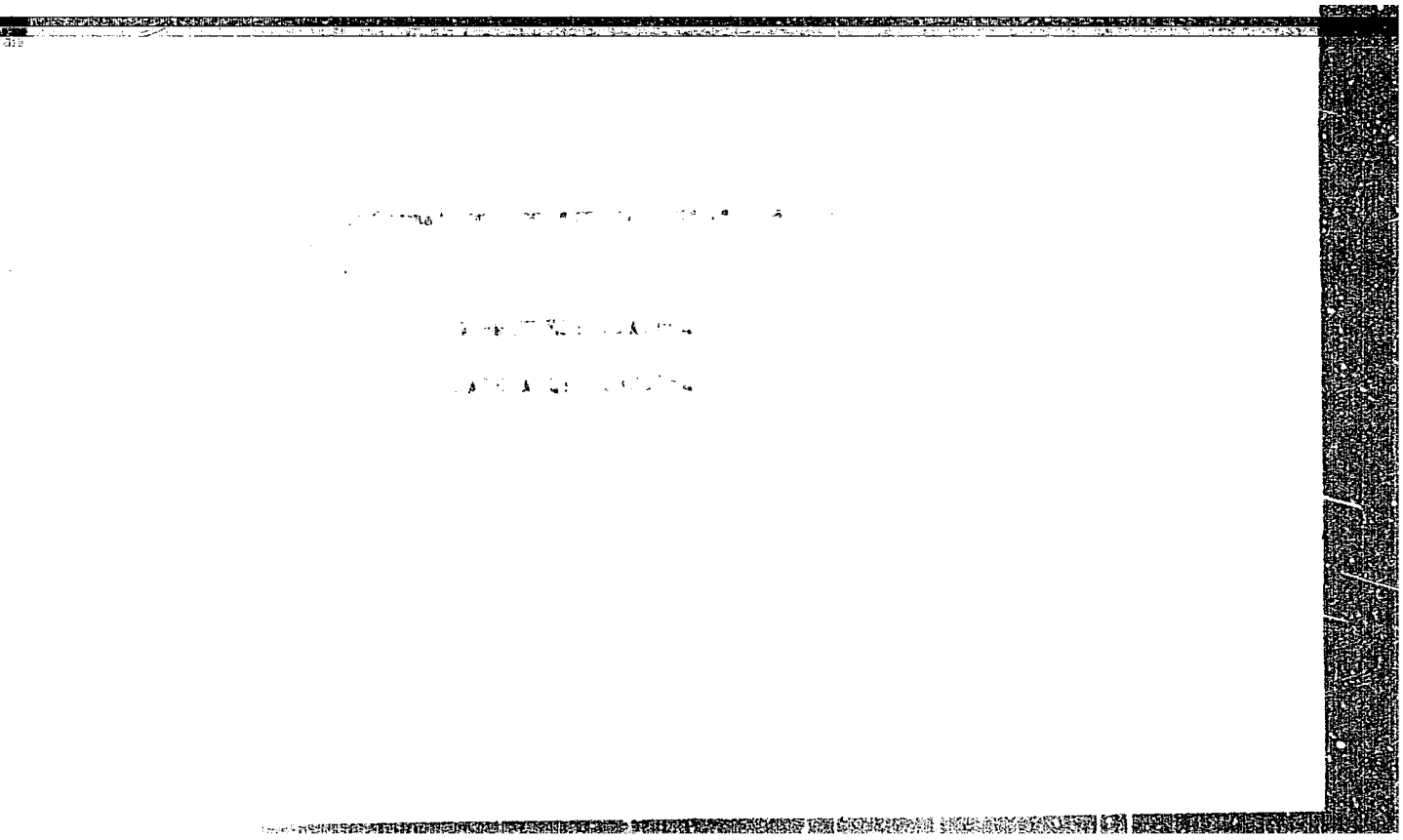
"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4



APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, Georgiy Mikhaylovich; YATSENKO, Konstantin Ivanovich; ~~PINCHUK, A.P., red.~~; SAAK'YAN, Yu.A., red.izd-va; BOROVINSKAYA, L.M., tekhn. red.

[How to make articles from metal sheets, sections, and pipes] Kak izgotovit' detali iz lista, profilei i trub. Rostov-na-Donu, Rostovskoe knizhnoe izd-vo, 1963. 81 p. (MIRA 17:3)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, G.V.

Using the capacitor method in measuring contact potential difference. Prib.i tekh.eksp. 6 no.5:128-132 S-O '61. (MIRA 14:10)

1. Taganrogskiy radiotekhnicheskiy institut.
(Electronic measurements)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, G.Ye. (Donetskaya oblast', Torez, prospekt Gagarina,d.26,kv.28)

Microtraumatism in miners. Ortop., travm. i protez. 26 no.10: 59-62 O '65. (MIRA 18:12)

1. Iz mediko-sanitarnoy chasti (glavnyy vrach - B.D. Kolesnikov) shakhty "Krasnaya zvezda". Submitted Sept. 1, 1964.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, I.M.; BORODINA, G.I.

Daily working regime in mines and longwalls after changing all underground workers to a six-hour working day. Sbor. DonUGI no.28:155-165 '62. (MIRA 16:8)
(Hours of labor) (Coal mines and mining--Management)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

[redacted], G.M., Inzh.; [redacted], G.I., Inzh.; [redacted], G.K., Inzh.; GLEZHIY, [redacted], Inzh.

Analysis of operations in longwalls not fulfilling the standards of specialty. Ugol' Ukr. no.2:24-26 '58. (MIRA 17:10)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

NAYDYSH, A.M.; DUDKO, I.S.

Use of the L-52m shuttle cutter-loader in Mine 13-bis of the Sovietskugol' Trust. Ugol' Ukr. 5 no.12:31-33 D '61. (MIRA 14:12)

1. Donetskiy politekhnicheskiy institut (for Naydysh). 2. Trest Sovetskugol' (for Dudko).
(Donets Basin—Coal mining machinery)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

ZHELTONOZHKO, Yu.V.; SHUMILIN, O.V.; DUDKO, I.S., gornyy inzh.

Response to A.P.Sudoplatov's article "Problems of the new technology of underground mining of coal seams." Ugol' 36 no.9:54-55 S '61. (MIRA 14:9)

1. Nachal'nik tekhnicheskogo otdela tresta Kirovugol' (for Zheltonozhko). 2. Nachal'nik normativno-issledovatel'skoy stantsii tresta Kirovugol' (for Shumilin).

(Coal mines and mining)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

TYUZNEV, K.I., dotsent; KIRICHENKO, V.I., gornyy inzh.; NIKONOV, A.F., gornyy inzh.; CHERNYAYEV, V.I., gornyy inzh.; SONIN, S.D., prof.; KILYACHKOV, A.P., dotsent; DUDKO, I.S., gornyy inzh.

Readers' response to A.A. Shamin, A.M. Belenskii and A.V. Galkin's article "Pillar methods of mining flat dipping seams without undermining the side walls in development workings." Ugol' Ukr. 6 no.2:36-41 F '62. (MIRA 15:2)

1. Novocherkasskiy politekhnicheskiy institut (for Tyuznev). 2. Trest Sovetskugol' (for Dudko). 3. Donetskiy nauchno-issledovatel'skiy ugol'nyy institut (for Kirichenko). 4. Gosudarstvennyy institut po proyektirovaniyu shakhtnogo stroitel'stva kamennougol'noy promyshlennosti (for Nikonov). 5. Ukrainskiy filial Vsesoyuznogo nauchno-issledovatel'skogo marksheyderskogo instituta (for Chernyayev). 6. Moskovskiy gornyy institut (for Sonin, Kilyachev).

(Coal mines and mining)
(Shamin, A.A.) (Belenskii, A.M.) (Galkin, A.V.)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, I.S., inzh.

Effect of the length of a longwall on the productivity of the DU-1 narrow range cutter-loader. Ugol'. prom. no.6(19-20 N-D '62. (MIRA 16:2)

1. Trest ugol'nykh predpriyatiy rayona Sovetsk v Donbasse. (Coal mining machinery)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, I.S., gornyy inzh.; POZIN, Ye.Z., kand. tekhn. nauk; LYUBOSHCHINSKIY, D.M.

Readers' reply to the article by V.N. Khorin "Overall mechanization of stopes in coal mines."; "Ugol'", 1962, No.3. Ugol' 38 no.1:56-57 Ja '63. (MIRA 18:3)

1. Trest Sovetskugol' (for Dudko). 2. Institut gornogo dela im. A.A. Skochinskogo (for Pozin). 3. Giprouglegormash (for Lyuboshchinskiy).

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

L 38882-66 EWT(l)/EWT(m)/T/EWP(t)/ETI IJP(c) AT/JD

ACC NR: AP6018571 SOURCE CODE: UR/0181/66/008/006/1947/1948

AUTHOR: Verkin, B. I.; Dudko, K. L.

ORG: Physicotechnical Institute of Low Temperatures, AN UkrSSR, Khar'kov (Fiziko-tekhnicheskiy institut nizkikh temperatur AN UkrSSR) 27

TITLE: On the nature of the photomagnetic anomaly in germanium 86 85

SOURCE: Fizika tverdogo tela, v. 8, no. 6, 1966, 1947-1948 B

TOPIC TAGS: germanium semiconductor, photomagnetic effect, semiconductor carrier, carrier density, electron recombination, magnetic moment, surface property, diamagnetism, physical diffusion

ABSTRACT: The authors point out that in measurements of the contribution of carriers to the magnetic susceptibility of a semiconductor by determining the change in the carrier density upon illumination involves a contribution due to surface recombination, which has not been accurately evaluated in earlier experiments by others. They have therefore used an induction procedure to register the changes of the magnetic moment of a sample illuminated by short flashes ($\sim 5 \times 10^{-6}$ sec) of strongly absorbed light from a flash lamp. In this method the change of the magnetic moment M of the sample, placed inside a measuring coil, induces in the coil a voltage proportional to dM/dt, which is displayed on an oscilloscope after amplification and measured. The tests were made on cylindrical n-Ge samples cut from single-crystal ingots, in which the rate of surface recombination was varied by mechanical polishing and by treating

Card 1/2

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L 38882-66

ACC NR: AP6018571

With different etchants. When the illumination was applied to the side surface of the sample, the moment was paramagnetic and related with the photomagnetic effect on the diffusion flow of carriers inside the sample. If the light was incident only on the face of the sample, the observed moment was diamagnetic. Although this effect has been attributed to the diamagnetism of excitons produced upon recombination of the electron-hole pairs, it can also be explained as due to photomagnetic currents. Experiments with variation of the rate of surface recombination showed that the diamagnetic moment remains practically unchanged with increasing rate of surface recombination, in spite of the fact that the over-all magnetic moment increased noticeably. This is taken as proof that the photomagnetic anomaly observed in germanium is connected with the photomagnetic effect on the diffusion currents at the edges of the illuminated area of the sample. The authors thank V. V. Yeremenko for interest in the work and useful discussions. Orig. art. has: 1 figure.

SUB CODE: 20/ SUBM DATE: 29Dec65/ ORIG REF: 001/ OTH REF: 004

Card 2/2

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

ACC NR: AP7001948 SOURCE CODE: UR/0120/66/000/006/0129/0133

AUTHOR: Verkin, B. I.; Dudko, K. L.

ORG: Physico-Technical Institute of Low Temperatures, AN UkrSSR (Fiziko-tekhnicheskiy institut nizkikh temperatur AN UkrSSR)

TITLE: Impulse method for measuring photomagnetic susceptibility [Reported at the 11th All-Union Conference of Low-Temperature Physics, 1964]

SOURCE: Pribory i tekhnika eksperimenta, no. 6, 1966, 129-133

TOPIC TAGS: photomagnetic susceptibility, photomagnetic effect

ABSTRACT: J. P. Van der Ziel et al. described their induction method of measurement of the magnetic moment induced in various substances by a laser flash, with no magnetic field applied (Phys. Rev. Letters, 1965, 15, 190). The present article describes a method which differs from the above in (a) possibility

 UDC: 621.317.41

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ACC NR: AP7001948

of operation in impulse magnetic fields and (b) use of simpler light sources. In the experiments, a solenoid supplied from a 9-kj capacitor bank developed a magnetic peak of 150 koe with a duration (half-period) of 0.05 sec. Soviet-made ISSh-100 and ISSh-500 flash lamps were used to produce single flashes with up to 10^{18} light quanta. Thus, the magnetic-pulse duration exceeded that of the light flash by thousands of times. The method is applicable to substances having short light-excitation life; the method permits observing the kinetics of relaxation of such substances. The sensitivity of the experimental outfit was 10^{-18} CGSM. Operation of the outfit was tested with Ge single crystals previously studied by a stationary method; a typical oscillogram is shown. "The authors wish to thank V. V. Yeremenko and I. V. Svechkarev for their constant interest in this work and useful discussions." Orig. art. has: 6 figures and 4 formulas.

SUB CODE: 20 / SUBM DATE: 27Dec65 / ORIG REF: 005 / OTH REF: 006

Card 2/2

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, L. Ye.

The Committee on Stalin Prizes (of the Council of Ministers USSR) in the fields of science and inventions announces that the following scientific works, popular scientific books, and textbooks have been submitted for competition for Stalin Prizes for the years 1952 and 1953. (Sovetskaya Kultura, Moscow, No. 22-40, 20 Feb - 3 Apr. 1954)

Name	Title of Work	Nominated by
Dudko, L. Ye.	"Cotton Growing" Textbook	Ministry of Africulture Uzbek SSR

SO: W-30604, 7 July 1954

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

LIVSHITS, B.Ya.; DUDKO, I.Ye.; SHAPOVAL, M.I.; IVANOV, N.P.

Automatic outlet of gas from coke oven gas collectors. Koks i khim. no.7:25-27 Jl '61. (MIRA 14:9)

1. Institut avtomatiki Gosplana USSR (for Livshits, Dudko, Shapoval). 2. Zaporozhskiy koksokhimicheskiy zavod (for Ivanov).

(Coke-oven gas)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, M.O., prof., zasluzhennyy deyatel' nauki USSR.

Sleeping in the open air. Nauka i zhyttia 9 no.8:22-24 S '59. (MIRA 13:1)
(SLEEP)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUMKO, M.P.; mekhanik defektoskopa (g.Novobelitsa)

Rail tester brushes. Put' i put. khoz. 4 no. 12:37 D '60.
(MIRA 13:12)
(Railroads--Rails--Testing)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

VASIL'YEV, V.G.; VOROB'YEV, B.S.; DUDKO, N.A.; ZIL'BERMAN, V.I.; KLITOCHENKO, I.F.; LITVINOV, V.R.; TKHORZHEVSKIY, S.A.; CHERPAK, S.I.

Present status of and prospects for the development of the production of natural gas in the eastern Ukrainian oil- and gas-bearing region. Gaz. prom. 10 no.4:1-6 '65.

(MIRA 18:5)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, N. Ye.

Ruptured ulcers of the stomach and duodenum. Kiev, Derzh. medychne vyso-vo, 1951.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, M.Ye., prof. (Kiyev, ul. Gor'kogo d.4, kv. 38)

Anesthesia of the nerve plexuses and conduction paths of the mediastinum for the prophylaxis and treatment of operative shock and cardiovascular insufficiency. Nov.khir.arkh. no.6:49-51 N-D '58.
(MIRA 12:3)

1. Kafedra gospital'noy khirurgii (zav. - prof. M.Ye. Dudko) Kiyevskogo meditsinskogo instituta.

(HEART FAILURE)
(MEDIASTINUM--INNERVATION)
(SHOCK)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, N.Ye., zaslyzhennyy deyatel'nauki, prof., BEYNKO, V.P., kand.med.nauk

Surgical tactics in removing swallowed needles. Vrach.delo no.8: 855-857 Ag '58 (MIRA 11:8)

1. Kafedra gospital'noy khirurgii (zav. - prof. N.Ye. Dudko) Kiyevskogo meditsinskogo instituta.
(ALIMENTARY CANAL--SURGERY)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, M.Ye., prof.; SLEPUKHA, I.M., kand.med.nauk; BZYNKO, V.F., kand.med.nauk

New method of repairing a diverticulum of the thoracic portion of the esophagus. Khirurgiia 35 no.12:84-85 D '59.
(MIRA 13:6)

1. Iz kliniki gospital'noy khirurgii (zav. - zasluzhennyy deyatel' nauki prof. M.Ye. Dudko) Kiyevskogo ordena Trudovogo Krasnogo Znameni meditsinskogo instituta imeni A.A. Bogomol'tsa.
(ESOPHAGUS diseases)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, N.Ye., prof.

Treatment of patients with obliterating endarteritis. Vrach. delo no. 1:65-66 '61. (MIRA 14:4)

1. Klinika gospital'noy khirurgii (zav. - zasluzhennyy deyatel' nauki USSR, prof. N.Ye. Dudko) Kiyevskogo meditsinskogo instituta i bol'nitsy imeni Oktyabr'skoy revolyutsii.
(ARTERIES—DISEASES)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, N.Ye.

Late results of surgery in aneurysm of the left ventricle of the heart. Grud. khir. 3 no.2:100-101 '61. (MIRA 14:4)
(HEART—DISEASES) (ANEURISMS)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, N.Ye., prof.; IVANOVA, N.A., kand.med.nauk

A new anticoagulant sinantrin C (sinantrol) and its use in the treatment of thrombosis and thrombophlebitis. Khirurgiia 36 no.9: 14-17 S '60. (MIRA 13:11)

1. Iz kliniki gospital'noy khirurgii (zav. - zasluzhennyy deyatel' nauki USSR prof. N.Ye. Dudko) Kiyevskogo ordena Trudovogo Krasnogo Znameni meditsinskogo instituta imeni A.A. Bogomol'tsa i bol'nitsy imeni Oktyabr'skoy revolyutsii (glavnyy vrach D.D. Sergiyenko).
(ANTICOAGULANTS) (THROMBOSIS) (VEINS--DISEASES)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, N.Ye., prof. (Kiyev)

Ivan Aleksandrovich Zav'ialov, of Kiev, eminent scientist and surgeon; on his 80th birthday. Nov. khir. arkh. no.4:123 Jl-Ag '60. (MIRA 15:2)

(ZAV'IALOV, IVAN ALEKSANDROVICH, 1880-)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, N.Ye. (Kiyev, B. Shevchenka, 13)

Removal of foreign bodies (needles) from the heart. Grud. khir. 2 no.4:114-119 Jl-Ag '60. (MIRA 15:6)

1. Is kliniki gospital'noy khirurgii (zav. - zasluzhennyy deyatel' nauki prof. N.Ye. Dudko) Kiyevskogo meditsinskogo instituta (dir. - dotsent V.D. Bratus') i otdeleniya serdechnoy khirurgii (zav. - prof. N.Ye. Dudko) bol'nitsy imeni Oktyabr'skoy revolyutsii (glavnyy vrach D.D. Sergiyenko.
(HEART--FOREIGN BODIES)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, N.Ye. [Dudko, N.IE.]; IVANOVA, N.A.; YANKOVSKIY, V.D. [IAnkovs'kyi, V.D.]

The new anticoagulant synanthrin C (synantrol 20) and its use in the thrombo-embolic disease and vascular surgery. Fiziol. zhur. [Ukr] 7 no.5:682-689 S-O '61. (MIRA 14:9)

1. Hospital Surgical Clinic of the A.A.Bogomoletz Medical Institute of Kiev; Laboratory of Age and Comparative Physiology of the A.A. Bogomoletz Institute of Physiology of the Academy of Sciences of the Ukrainian S.S.R., Kiev.

(ANTICOAGULANTS (MEDICINE)) (SYNANTROL 20)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, N.Ye., prof. (Kiyev, 5,ul.Gor'kogo, d.4, kv. 37)

Repeated operations on the stomach. Klin.khir. no.8:22-24 Jl '62.
(MIRA 15:11)

(STOMACH--SURGERY)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, N.Ya., prof.; [redacted], V.D.

Frequency of thromboembolic complications according to data from pathoanatomical autopsies. Sov.med. 26 no.12:3-8 D '62.
(MIRA 16:2)

1. Iz kliniki gospital'noy khirurgii (zav. - zasluzhennyy deyatel' nauki prof. N.Ye. Dudko) Kiyevskogo meditsinskogo instituta i prozektury Bol'nitsy imeni Oktyabr'skoy revolyutsii (zav.- prof. Ye.I. Chayka), Kiyev.
(EMBOLISM)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

KORENEK, O.A. [Koren'ok, O.A.]; DUDKO, O.M., assistent

Organization of care for children entering kindergarten for the first time. Ped., akush. i gin. 20 no.2:28-31 '58. (MIRA 13:1)

1. Kafedra organizatsii okhrany zdorov'ya (zav. - dots. I.P. Pigida) Kiyevskogo ordena Trudovogo Krasnogo Znameni meditsinskogo instituta im. akad. A.A. Bogomol'tsa (direktor - dots. I.P. Alekseyenko) i yasli No.48 (zav. yaslyami - O.A. Korenek) Pecherskogo Rayzdravotdela g. Kiyeva.

(CHILDREN--CARE AND HYGIENE) (KINDERGARTEN)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

DUDKO, O.M., kand.med.nauk; GRABOVSKAYA, T.V. [Hrabovs'ka, T.V.]

Characteristics of the method of studying the incidence of rheumatic fever in children. Ped., akush. i gin. 23 no.4:21-24 '61. (MIRA 17:1)

1. Kafedra organizatsii zdravookhraneniya (zav. - dotsent I.P.Pigida [Pihida, I.P.]) Kiyevskogo ordena Trudovogo Krasnogo Znameni meditsinskogo instituta im. Bogomol'tsa (direktor - dotsent V.D.Bratus').

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PLINER, Yu.L.; DUDKO, O.M.; KONEV, A.F.; BOBYLEV, O.K., inzh., retsenzent

[Economics of iron alloy production] Ekonomika ferrosplavnogo proizvodstva. Moskva, Metallurgiia, 1964. 149 p. (MIRA 17:12)

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R000411430004-4

Dudko, P.D.

137-1957-12-25434

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 12, p 354 (USSR)

AUTHORS: Gorbenko, V. L., Dudko, P. D.

TITLE: Modernization of the Amsler Machine to Permit Endurance Testing at Increased Sliding Speeds (Modernizatsiya mashiny Amslera dlya ispytaniya na iznos pri povyshennykh skorostyakh skol'zheniya)

PERIODICAL: Tr. Khar'kovsk. politekhn. in-ta, 1957, Vol 9, pp 199-200

ABSTRACT: A description of a modernization performed on the Amsler machine in order to permit endurance testing at increased sliding speeds. Essentially, the modernization consisted in the replacement of permanent pair of gears (G) by a selection of replaceable ones. The employment of replacement G's made it possible to rotate the upper specimen (S) at speeds ranging from 186 to 1320 rpm, while the lower S rotated at a constant rate of n'' = 206 rpm; thus, employing S's of 50 mm and 70 mm in diameter, sliding speeds of 0 to 5 m/sec could be achieved. For the purposes of decreasing noise, it is recommended that each pair of adjacent gears be worn in with the aid of an abrasive paste. As a result of the modification, it became possible to simulate, under conditions of dry friction, the wear of various machine

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137-1957-12-25434

Modernization of the Amsler Machine to Permit Endurance Testing (cont.)

parts possessing sliding contact surfaces, as well as to reproduce the oxidation and thermal aspects of wear.

Z. F.

1. Abrasion-Testing equipment

Card 2/2

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DUDKO P.D.

137-58-1-1721

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 1, p 233 (USSR)

AUTHORS: Gorbenko, V. L., Dudko, P.D.

TITLE: Effect of Mechanical Treatment on Wear Resistance of Steel Machine Parts (Vliyaniye mekhanicheskoy obrabotki na iznosoustoychivost' stal'nykh detaley mashin)

PERIODICAL: Tr. Khar'kovsk. politekhn. in-ta, 1957, Vol 9, pp 211-214

ABSTRACT: An investigation has been conducted for the purpose of determining the magnitude and nature of primary wear of specimens (S) with reference to the roughness at the outset and the method of machining. The S employed were rollers of 50 mm diameter made of steel 45 in the normalized state, H_B=136. The pressure used in the test was 100 kg. The peripheral velocity of the upper specimen was 28.3 m/min. and of the lower 32 m/min. Roughness was measured on a MII-1 machine and a MIS-11 binocular microscope and was evaluated in terms of H_{mean}. Microhardness (M) was measured on a PMT-3 instrument. It was found that the M of the S after machining was 200-310 kg/mm^2, and that of electrolytically polished S was 103-127 kg/mm^2. The reduced M of electrolytically

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